10 April 1986

MEMORANDUM FOR: [redacted] STAT
Deputy Director for Policy/PPS

FROM: Deputy Director, Program & Budget Staff

SUBJECT: Comments on IG(Space) Report

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1. The justification for acquisition of a replacement orbiter is not clear cut. On the one hand, the report urges that the STS henceforth be restricted to those missions which require or at least benefit from its unique capabilities. This drastic shift in policy would presumably reduce the number of STS missions considerably. On the other hand, the report advocates restoring the STS to a four orbiter fleet. A three orbiter fleet can be expected to support somewhere between 156 and 234 flights through the year 2000. Nowhere is this potential capacity compared with the expected number of candidate missions given the recommended restrictions. A fourth orbiter available in 1990 would add capacity for an additional 40 to 60 missions. Credit is taken for this capacity is working down the backlog with no evidence that this would be consistent with the more restrictive policy as to the missions the STS would accept. There seems to be a hidden assumption that, if all goes well with the reworked STS, NASA will work its way back into the space launches across the board. This runs head on into the recommended assurance to the private sector that the government will stop competing for commercial launch business. If, after analysis of the candidate missions which will require the STS's unique capabilities, the capacity afforded by a three orbiter fleet is judged inadequate or marginal, the least expensive means of obtaining added capacity or posturing ourselves to recover from additional orbiter losses should be sought, giving attention to the time value of money.

It is also unfortunate that the Report provides no options which achieve the same launch capacities as Options 3A and 3B but employ ELVs rather than a fourth orbiter.

2. Failing to treat a stand-down longer than 12 months seriously compromises the utility of the report. The correction of the proximate cause of the Challenger tragedy will in itself probably cause a stand-down much in excess of the assumed 12 months, and the exhaustive review of flight safety

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being undertaken could turn up the need for additional fixes. Hence, the report addresses a hypothetical situation departing severely from what is likely to be the actual schedule problem that will have to be solved. The report is forthright is stating the 12-month assumption, but those up the line can hardly be expected to be better able to deal with the problem that the IG is ducking. Among the questions that ought to be addressed but is the following:

> Can we afford the luxury of the added time required for competitive procurement of ELVs if the STS backlog is going to be greater than that suggested in the report?

3. The cost comparisons across options are not very meaningful. For example, they contain many local assumptions about reimbursements and flight charges and don't give any indication of what prepaid services will be on the books at the end of FY 1991 when the cost date is truncated. Nowhere does the report seek to answer very basic economic questions, for example:

> What is the before and after picture of the cost of launching individual satellites. With the new restrictions on the STS, what will be the cost of each STS flight and how will that compare with the cost of ELVs that will be substituted to provide basic launch services.
>
> NASA's pricing for commercial and foreign launches took advantage of the fact that its fixed base could support more launches that those required by itself, DoD and the civil sector. Looking toward the future, a key question is whether the US can tailor the fixed base -- essential to support the ELVs it is turning to in lieu of the STS -- in a manner which will also allow that fixed base to be shared in the pricing of launch services offered to the commercial and foreign market.
>
> NASA apparently wants to ease out of its current commercial business, i.e. fulfill its obligations to the extent possible without booking new ones. What are the economic implications of quitting "cold turkey" vs. gradual withdrawal? What liabilities does NASA have if it cancels its launch agreements? Does it make sense to run the added near-term risk to the remaining orbiter fleet of following a gradual withdrawal approach?

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4. The summary tables show missions through 1995 but give estimated costs through only 1991. The narrative frequently refers to these costs as "total" costs, which is very misleading when examining solutions to a problem that will have impacts to the year 2000 and beyond. The cost comparison between 3A and 3B is also confusing. Although the orbiter is cheaper in 3A (at least in then-year dollars), NASA apparently is assumed to "sell" the added capacity at a loss so the "total" cost is higher.

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